CONCRETE SHORT COURSE

A short concrete course was given by the College of Engineering at the Chemistry Building on the evening of January 21 and 22.

The program of the first night was given in three parts. Prof. J. R. Shank of the department of engineering in his talk on "Theories of Proportioning" discussed the following points of interest: early ideas, voids, maximum density, the guide for grading sand and coarse materials, and gravel.

Professor Shank also discussed the method of Mr. Edwards of Canada, the consideration of the surface factors. The use of fine materials necessitates the use of a greater area of cement than that of the coarser materials. A greater amount of cement must be used with the finer materials.

Another point that Professor Shank stressed was the water-cement ratio; this ratio sums up as —so long as the concrete is workable, strength depends upon the amount of water to cement.

Fulfilling of specifications, and the arbitrary or experience proportion was another point of Professor Shank's discussion. As an example to amplify his statements the Professor referred to the Panama Canal where twice as much cement as other concrete materials was used, which, to a great degree, assists to preserve this structure.

J. W. Kelly of the Portland Cement Association followed Professor Shank with a talk on the "Bulking of Aggregates." Mr. Kelly performed a most striking experiment with a jar of sand. He showed that the addition of five per cent of moisture, by weight, fluffs up the volume of the sand twenty-five per cent. "Bulking" is a considerable factor in concrete mixing.

The latter part of the first evening was given over to actual demonstrations and trial concrete mixes to Professor Shank and J. M. Weed of the Engineering Experiment Station. Using a water ratio of (1) and adding part sand and part gravel, to make concrete, the proportions were determined of each test.

On the program of the second evening of the course were three more discussions. J. M. Weed spoke on "Water-Cement Ratio on the Job." He pointed out that it is highly practical to make several trial batches or mixes right on the job and to use that one which proves most economical.

J. W. Kelly spoke on "Field Control Methods," giving a full description of the field equipment of a concrete inspector.

Professor Shank discussed "Durable Concrete" summing up his talk by formulating a general rule for mixing concrete. According to Professor Shank in mixing concrete "use as large or coarse a material as conditions will permit; and keep it damp in cure as long as conditions will permit."

The remainder of the evening was taken up again by trial tests to determine the yield of a single sack of cement. Moisture, slump and cylinder tests were made and discussed.